

Wind Power

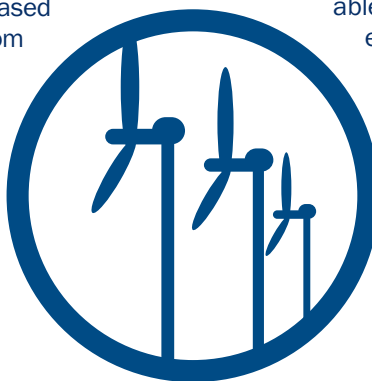
U.S. Environmental Protection Agency • May 2002

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Wind Power in Rhode Island

Wind resources can be used with both large wind turbines for utility applications and with small wind turbines for on-site generation. As a renewable resource, wind is classified according to wind power classes, which are based on typical wind speeds. These classes range from class 1 (the lowest) to class 7 (the highest). In general, wind power class 3 or higher can be useful for generating wind power with large (utility-scale) turbines, and small turbines

Though siting decisions regarding individual wind facilities are up to state and local officials, DOE has estimated that approximately 8% of Rhode Island's land area may be suitable for wind power development. Where did these estimates come from? First, they excluded the land which has a wind power class of 2 or less—the nonusable resources. Then, they excluded land with urban development or land that is environmentally sensitive. Assuming there may be other land-use conflicts as well, they subtracted out 50% of forest land, 30% of farmland, and 10% of rangeland, resulting in about 8% of the state of Rhode Island having good winds and being available for development.



WIND POWER CLASS	50m (164 ft)		
	WIND POWER* W/m ²	SPEED m/s † mph	
1	0	0	0
2	200	5.6	12.5
3	300	6.4	14.3
4	400	7.0	15.7
5	500	7.5	16.8
6	600	8.0	17.9
7	800	8.8	19.7
	2000	11.9	26.6

RIDGE CREST ESTIMATES (LOCAL RELIEF > 1000 FT)

* Wind Power Density - watts per square meter
† meters per second

can be used at any wind speed. Class 4 and above are considered good resources.

According to analysis conducted by the US Department of Energy, Rhode Island has good wind resources in parts of the state. The primary areas of good onshore wind energy resources (class 4 through 7) are the state's coast and exposed hilltops, ridge crests, and mountain summits.

Onshore Potential

An extensive area of New England, including parts of Rhode Island, has annual average wind power of class 3 or higher on exposed locations. Most of the hilltops and mountain tops in Rhode Island have class 3 or 4 wind power, less than that found in the larger mountain ranges in the northern New England states. This wind power can increase to class 6 and 7 in the winter.

According to these estimates, if all of the wind energy potential was developed with utility-scale wind turbines, the power produced each year could equal 2,000,000 megawatt-hours - or 31% of the entire state's electricity consumption.

Coastal and Offshore Potential

The annual average wind power for exposed Atlantic coastal and offshore islands of the Northeast is primarily class 4, 5, and 6. Offshore potential tends to be higher due to a lack of local roughness features such as vegetation and buildings which can reduce the wind power potential at some land based sites. Class 4 is found immediately along the coast, while class 6 exists along the outer capes and islands such as Cape Cod and Nantucket Island. Wind measurements up to 46 m (150 ft) above ground have been taken at four DOE-installed tower sites along the northeastern Atlantic coast including Block Island, Rhode Island. Long-term data (5 yr) from both Block Island and Montauk Point indicated class 4 annual average wind power at 50 m (164 ft) for those areas. (see back for current state of wind power in New England)



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Current and Proposed Wind Projects in New England

Existing Wind Projects

Location	Size (in Megawatts)	Number of towers	Facility Area (acres)	Height of tower (feet)	Length of Rotor (feet)
Holyoke, MA	0.25	1	< 1	80	40
Hull, MA	0.66	1	< 1	164	75
Princeton, MA	0.32	8	16	100	22
Madawaska, ME	0.05	1	< 1	100	25
Orland, ME	0.05	1	< 1	100	25
Searsburg, VT	6.0	11	35	131	66

Proposed Expansion of Existing Wind Projects

Location	Added Capacity (in Megawatts)
Hull, MA	0.66
Princeton, MA	3
Searsburg, VT	30-40

Proposed Wind Projects

Location	Size (in Megawatts)
Hancock, MA	13.5
Monroe, MA	20-30
Nantucket Sound, MA	420
Nantucket Shoals, MA	20
Nantucket-SE, MA	600-800
Phillips, ME	52
Manchester, VT	9

